

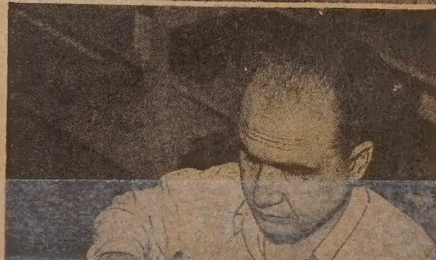
BLIND SERVICEMEN

D. W. Uhl

HV1655
.U 1946



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HOUSE FOR THE BLIND**



1—Mr. Peterson's Braille Multitester in use.
2—Blinded servicemen use power machinery.
3—Some of the students working at the bench.
4—The soldering iron tip is located by "feel."

BLIND SERVICEMEN

By D. W. UHL

HV1655
G
COPY 1

THE blinded veteran and his future is one of the major problems of the Veterans Administration. Full of hopes and plans for the future, the handicapped GI is unwilling to settle down to rug making or basket weaving. He spurns these and other "traditional" occupations that are often forced on the blind. Like most of us, he wants what many think he can't have. He longs desperately to make his living in one of the normal professions of his sight-

further. When attached to a conventional tube tester, it will record the relative strength of the tube tested.

Because its patent is still pending, Mr. Peterson is reluctant to reveal details of his invention. But here is the principle:

Inside and out of sight is the conventional dial of a multitester. A photoelectric cell reads this dial for the blind radio man. The operator swings a pointer on the face

ed brethren.

That is why the Veterans Administration is enthusiastically welcoming the brain child of blind LaVon Peterson of Omaha, Nebraska—a radio engineering school for the blind. It is the only one in the world and was dubbed "impossible" before Mr. Peterson proved it could be done.

Mr. Peterson's Radio Engineering Institute teaches blinded veterans as well as other blind men to become independent radio servicemen; and even to become in many cases better servicemen than the average sighted shop owner.

The lineup of courses taught at the institute sounds like a college curriculum. It goes far beyond the usual instruction in ailing tubes and receivers. All the latest developments in radio and related fields are included. Training is given in both theory and operation of frequency modulation equipment, for instance. Even industrial electronics is taught.

The blind graduate will be able to build as well as service record players, record changers, home recorders, public address systems and push button sets.

The institute also offers a number of courses aimed at making the blind man an efficient shop keeper and business man. He gets a touch of elementary psychology in the course on "Selling Your Repair Work." Proper business methods are covered in bookkeeping, typewriting, keeping an inventory, and good business ethics. A special type of Braille, comparable to business English, teaches him to write down the complicated terms of his profession.

A BRAILLE MULTITESTER

The most important thing in the school, however, is a machine—a special multitester which makes a blind radio man the equal of his sighted colleagues. Like the multitester of the seeing radio service man, it measures voltages, traces current, etc. But Mr. Peterson's Braille Multitester goes

of the machine until he hears an audible signal. The sightless man then "reads" with his sensitive fingers the outside Braille dial.

The Braille Multitester is believed to be the only one in the world. It was developed and used successfully by Mr. Peterson in his own radio service shop. Each student will build his own before leaving the school.

The school at present is set up in the Omaha Y.M.C.A. in rented offices and laboratories. There is a side agreement for housing the institute's blind students at the Y. Thus it is made easier for them to get to classes. They also eat most of their meals in the Y dining room.

Students are from all sections of the country. For, in addition to the Veterans Administration, state rehabilitation agencies have expressed great interest in the school.

The idea for the Institute was planted in Mr. Peterson's mind eight years ago when he hung out his shingle as a radio service man. He refused to listen to teachers who said "It can't be done!" He had already gone too far by then to give up his passion for radio.

The earnest, red-haired young man with the determined chin and the eyes that had been blind since birth had got hold of the Braille Radio Amateur's Handbook. The book was well worn and dog-eared before young Peterson would give up trying to gain more information from it. He found a few more books, translated into Braille, which gave him a little more meager knowledge of radio.

Then he was stopped. He could find no more books on radio which he could read with his sensitive fingers. He went to teachers at the Idaho School for the Blind and told them his dream of becoming a radio serviceman. He asked for help.

They were kind. But they answered: "It is impossible." They told him sight was an absolute necessity for recognizing types of tubes, for reading dials, for handling the intricate apparatus of a repair man, for

using a hot soldering iron. He listened but he was not convinced. There was no one who could teach him what he wanted to know. He determined to learn for himself. And he did.

He got some parts and began to learn them by touch. He pattered with old radios until he knew them inside out. Then he began his toughest job—soldering. "You'll burn yourself if you try to solder," his teachers had told him. They were right! He burned his hands repeatedly. But he finally learned a method of handling the hot iron. He gently fingers the spot to be soldered, bringing the iron ever closer. Then suddenly his fingers draw back and the iron comes down on the critical spot. Today he solders as efficiently as any sighted man. Professional radio men who can see are amazed at the smooth and workmanlike job he does.

Last came his idea for the Braille Multitester. That did it. He could do anything

(Continued on page 360)

REVAMPED TESTER

An Old High-Quality Instrument Is Put to Work

THE pre-war Model 90 Supreme Analyzer was and is a very fine instrument. It used an analyzer plug, (with various adapters) which was inserted into the receiver, the tube being placed in a socket in the analyzer, while the various readings were taken with the use of buttons.

It was also used as a multimeter tester. The meter has a very sensitive, 350 microampere movement, with a built-in rectifier.

The present day V-O-M does not use these plugs, some radio sets being so small as to make it impossible to replace the tube with the analyzer plug.

This revamped instrument is much smaller, because the sockets, buttons and analyzer plug have been eliminated.

All the original wire-wound resistors

This arrangement, together with the 2000-ohm series resistor and the tapped shunt, acts as a protector of the sensitive movement, should the range switch be set in a wrong position.

There is no polarity on either of the probes. Both A.C. and D.C. readings can be taken with the same range switch and without the use of any special A.C.-D.C. switch.

There is a 3150-ohm resistor, incorporated in the meter, controlled by an A.C.-D.C. switch, but this is used only to make the A.C. readings linear with the scale. The difference in the reading, by using this switch is unimportant for servicing purposes. A.C. readings may be taken with the switch in the D.C. position as well as taking D.C. readings with the switch in the A.C.

liampere both the 4½- and the 45-volt batteries should last a long time.

As the zero adjustor—used in resistance measurements—is a variable resistor across the movement, it should be in the OFF position when taking voltage and current readings. This is necessary because the original volt-resistance switch has been eliminated.

The low-ohm scale is a closed circuit in the 0-5000-ohm range. Resistance as small as a fraction of an ohm can easily be read.

A small chart can be glued to the cover of the instrument or the new values inked on the original scale, which is easily accessible.

As bakelite was difficult to obtain, I used the ½-inch pressed board, which was very easy to drill.

nals.

In the revamped instrument, these spools were mounted on a rectangular piece of bakelite, making the terminals of the meter more accessible.

Due to the peculiar arrangement of the connections within the meter, all readings are taken through the rectifier.

advantage of, resulting in a 0-500,000 ohm reading with a self-contained 4½ volt battery.

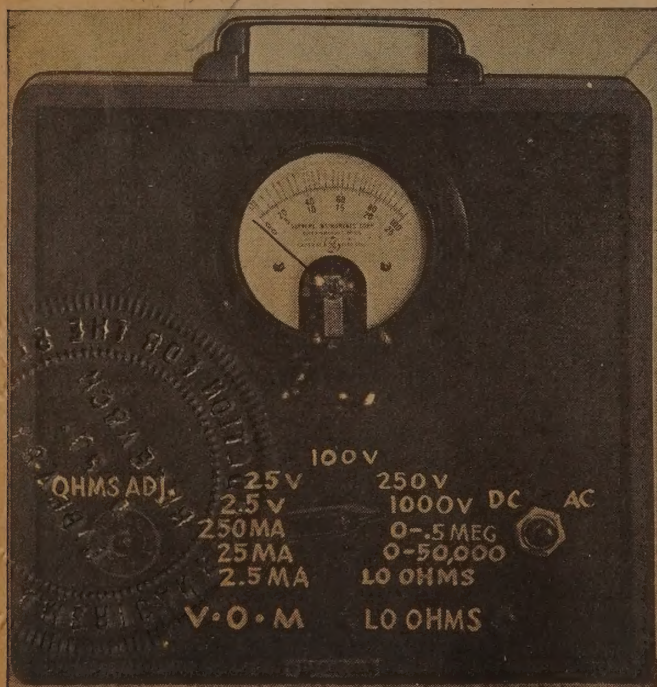
This range can be easily increased to 0-5,000,000 ohms by the addition of a small 45-volt battery in series with a 150,000-ohm resistor.

As the current for a full-scale deflection is only one-third of a mil-

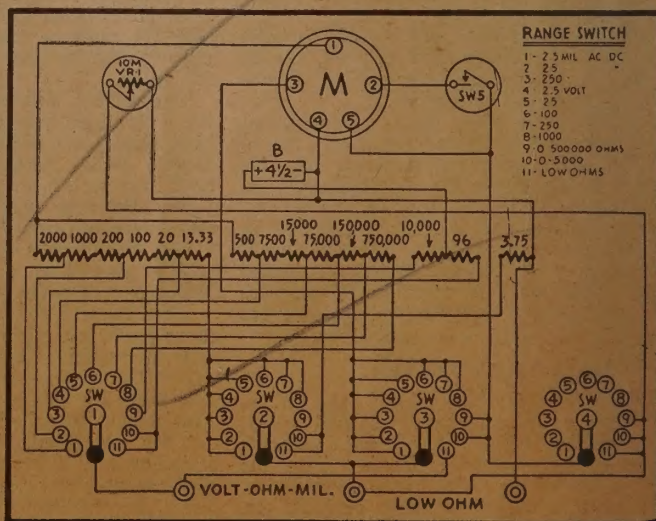
made with white gummed paper. After the positions of the range switch was marked out, the words and figures were typed in, before pasting it into position on the panel.

Output readings can be taken without any changes of the switches, the ranges being the same as A.C. voltages. This

(Continued on page 345)



Left—The multitester in a compact case. It will be noted that only three terminals and one switch—for A.C. and D.C.—other than the gang are needed for a large number of checks. Below—Schematic of the reconstructed tester showing parts values, also switch positions.



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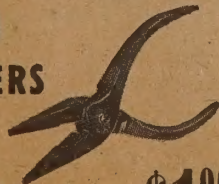
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BLIND SERVICEMEN

(Continued from page 321)

in a radio shop that a man with sight could do. In 1937, he opened his shop doors to customers. He was a success. He sold new radios as well as repaired old ones. In general, he carried on his business as any sighted person could have done.

When he had proved to himself that a blind man could do radio work successfully, he began to dream of passing his knowledge on to other blind men. He knew from experience that independence is the thing the blind man desires above almost anything else. He knew that if he could teach them to be radio experts, they could be independent.

But problems beset him. Where would the money come from for such a school? Where would he get students? Who would pay for their training and the equipment they would have to have?

Then, one day in 1942, while he was still dreaming his dream, a telephone call came from the Army Signal Corps and Marine Materiel School in Omaha. A story about him in *Radio-Craft* had caught the eye of the school's owner. Could he come and teach servicemen to repair wounded radios in the dark?

He could and he did. He taught soldiers and Marines to repair and service their equipment in total darkness under the conditions they would find on a battlefield. So successful was he that in the 30 days allotted for each class, he not only taught them to service their equipment but to build simple radio circuits in a darkened room.

His wartime experiences further proved to him that his dream of teaching other blind men could be a reality. If persons with sight, naturally clumsy in the dark, could be taught this work, he knew that the average blind man could learn it far more easily. For the blind learn great manual dexterity, and their sense of hearing is developed beyond that of their sighted fellow men. And, after all, radio is concerned with the science of sound.

First he went to a few friends for financial backing. Then he got in touch with agencies for the blind all over the country. When he told them of his plan, some were skeptical. Many were enthusiastic.

But the blind themselves seized upon the plan. Inquiries about the proposed institute flooded in from all corners of the nation. They came from broom makers, piano tuners, rug weavers, men with popcorn stands. They came from men in all sorts of occupations, but they had one thing in common. Each of the letters was from a man with a burning desire to do radio work, to become an economically independent business man.

Now came the job of convincing the rehabilitation agencies of the states that radio work is suited to the blind man and that he can make a financial success of it. And he convinced them must, for almost all blind persons are forced to rely upon the agencies for their educations.

There was proof ready and waiting for them in Mr. Peterson. After successfully operating his shop in Preston, Idaho, and after his tenure as teacher for the Army and Marine Corps, he had opened his own shop in Omaha.

In little more than a year he had built his business to the point where he had one of the largest, if not the largest, in the area.

A traveling representative was appointed to explain the institute to the rehabilitation agencies, which are continually on the lookout for new opportunities for the blind. The representative already has covered some 20 states in the east, northeast and north. Convinced, agencies are now sending students.

The states pay for a student's training with the help of the Federal government. After his graduation, each blind person may have up to \$250 to set himself up in business. It is not a great deal to equip a radio repair shop. But radio men agree that "it's more than the usual shoestring" on which radio men often start.

The training takes a year—a little more or a little less as the student needs it. The first half of the course is spent in learning theory, practicing on models, and attending classes. The last half is devoted to actual work on radios and similar equipment.

In other words, the blind student will have a chance to serve his apprenticeship under the direction of the school with all the help he needs available.

An unusual feature of this last half



Frank
BEAVEN

Suggested by:
J. F. Dunnett,
Vancouver,
B. C., Canada

"Yeah! Well if you're not here in a couple of minutes, it's all off!"

RADIO-CRAFT for FEBRUARY, 1946

PPM—NEW TECHNIQUE

(Continued from page 349)

common frame of the system, where they may be put on telephone lines or otherwise routed as desired.

OTHER RECEIVER ELEMENTS

The actual receiver circuit is not as simple as has been described. A number of necessary circuits have not been mentioned. One of these is the automatic frequency control circuit, which is hooked in after the eighth I.F. stage. This applies to the high-frequency oscillator a voltage which keeps it exactly 60 Mc. below the received signal, correcting for slight frequency variations in either transmitter or local oscillator. Operation is along standard a.f.c. lines. When no signal is being received, a searcher circuit is activated, causing the local oscillator to travel over the tuning range till a signal is found, when it locks in on the signal frequency.

An a.v.c. circuit is also provided after the first video amplifier, control voltages being applied to the I.F. stages. Two clipper stages also assure uniformity of received pulses.

The gating circuits are also more complex than appears in the simplified

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AMBITIOUS: 23; 1 year army radio; radar repair training; seeks future in radio field; willing to learn; 1 year college. Stanley Klein, 9205 Flatlands Ave., Brooklyn N. Y.

the vertical, and broad in the horizontal plane. The superstructure is a reflector excited by the horn at bottom.

Photo 5 is a portrayal of the feelings which German radar operators might have been expected to feel when their apparatus was rendered useless by "window." It was posed with a captured German radar at Foggia, Italy.

Radio defense against the atom bomb is unlikely to be of great value, in the opinion of many of the scientists who helped develop it. Many different methods can be used to detonate the bomb; just how many is probably not yet known. Because of the possibility of employing many different detonating mechanisms, the defense against the atomic bomb is complicated. Radio might detonate it, but to do so one would have to know the type of detonating mechanism used in the bomb. Just as there is no defense against conventional explosive, per se, so there is no defense against atomic-energy explosive.

Atomic explosives would without doubt be launched against an enemy country in an atom-powered rocket, atomic power itself rendering other means obsolete for war use. Thus any other than radio means would be too slow to detonate the destructive charge at a safe distance from its objective.

or VHF install. and maint. Prefers work in middle-west. Will furnish references. Age 25. Write P. O. Box 14, Springfield, Mo.

RADIO TECHNICIAN, 25, married. Graduate of Air Force radio and radar schools. Two years of practical experience in a Signal Corps Depot and with the Air Transport Command. Familiar with all test instruments. Vicinity of New York City. Moderate salary to start. Morris Landsberg, 937 E. 181st St., Bronx 60, N. Y.

RADIO TECHNICIAN, 3 years exp. on low and medium power HF and VHF transmitters and receivers. Radiotelephone 1st class license. Desire position with good opportunity with broadcast station anywhere in U.S.A. Robert A. Boyle, 31-33 80th St., Jackson Heights, N. Y.

YOUNG MAN, 29, married. 3 years experience AAF Radar. Maintenance, installation, and operating. Desires position in above. Anthony Urban, 412 W. 57th St., New York City (49), CH 2-339.

RADIO INSTRUCTOR Air Force trouble shooting, maintenance, 3 yrs.; 15 yrs. commercial exp., service, sales; broadcast and "ham" licenses. Brody, 1057 Bryant Ave., Bronx 57.

RADIO REPAIRMAN; semi-skilled, 2½ yrs. army; 1 yr. civilian, experience in pulling sets, giving estimates; desires work in store. Sam Broumstein, 1248 St. Marks Ave., Brooklyn 13; PR 4-5345.

RADIO AND RADAR TECHNICIAN; 3 yrs. exp., aircraft communications and navigation equipment. Azuz, 415 Claremont Pkwy., Bronx 57.

PREVIOUS 4 yrs. electrical exp., indoor and outdoor work; also thorough radio, radar trouble shooter and tester. E. Rothenberg, 2939 Brighton 5 St., B'klyn 24.

YOUNG MAN; 23; radio tech. 3 yrs. army exp., desires pos. with future; willing to sell—mod sal. Harry Garten, 2233 81st St., Brooklyn 14.

RADAR MECHANIC—3 yrs. Army exp. installations, repairs, will take any position with future; salary within reason. Sid Edelstein, 1059 53d St., Brooklyn 19.

AAA for alertness, ambition and ability; 23; some college; radio and sales office exp., speak French; will go anywhere. Ephraim Schwartz, 186 Clymer St., Brooklyn 11.

RADIO—2d class telegraph and amtr.; License M.O.S. 766; operty, emcl. or mfg. operator; transmitter maintenance; 24, single. Nemoyten, 440 Georgia Ave., Brooklyn 7.

MAN; 27, married; ambitious, experienced business administration radio and sound equipment field. Elliot Schwartzman, 141 E. 19th St., Brooklyn 26; BU 4-2672.

matic or common battery; 5 yrs. wire chief; willing, living wage. Bernard Levine, 1000 E 173d St., Bronx 60.

RADIO ENGINEER; int. broadcasting, 18 mos. exp. upstate station as transmitter engineer, hold 1st class commercial. Milton Meinwald, 7207-18th Ave., Brooklyn 4; BE 2-8044.

YOUNG; 21; ambitious; mechanically inclined; 3 yrs. radar work; seeks any pos. with future; willing to learn. Paul Rubin, 1063 Ward Ave., Bronx 59.

RADIO-OPERATOR, MECHANIC; 3 yrs. Army exp.; seek pos. with radio company; interested television, electronics; married. Paul Pushinsky, 579 Saratoga Ave., Brooklyn 12; DI 2-0797.

RADIO TECHNICIAN, 23, married; mathematics, radio design background; exp. radio, radar, control ckt.; construction, lab., research. S. Granat, 1717 Carroll St., Brooklyn 13; PB 4-3405.

RADIO, Loran, UHF Technician; 8 yrs. exp. in radio repair and design; repaired and designed all type electronic equipment; 23, Jerome Kass, 1124 43d St., Brooklyn 19.

RADIO OPERATOR—4 years Army experience, ambitious, quick to learn, 23, married, good at selling, accept position with future. Jack H. Glusky, 1150 Vyse Ave., Bronx 59.

TECHNICIAN; desires day job, tester or lab. asst.; 8 yrs. exp.; married; willing take test; prefer New York. Wm. Pendergrass, 104 Central Ave., Jersey City, N. J.

TELETYPE, 23, 2½ years army experience operation news transmission; preferably news bureau or communication work; worked staff P.R.D. of S.H.A.E.F., scribe, Paris; some radio-teletype work; steady position. Isidore Heiss, 40 Bristol St., Brooklyn, N. Y.

RADIO TECHNICIAN, 3 years Army, 9 yrs. civ. exp. seeks pos. as lab. techn., engr. aid. Coll. drifting bekrd. Frank Platt, 19 West 83 St., N.Y.C. 24.

EX-JASCO CAPTAIN; 29, civilian investigator, intelligence officer, staff communication air liaison, administrative executive ability, knowledge communications, radar, vaudeville, operations, production. Married, child; salary and future. A. Silverstadt, 410 Eastern Parkway, Brooklyn 25, N. Y. NEVINS 3-9825.

VETERAN 27, ambitious, easily adaptable. Attending Radio school evenings. Modest salary as radio apprentice. Harry Rothenberg, 3325 Park Ave., Bronx 67, N. Y.

RADIO MECHANIC; desires pos. with mfr. firm of electronic equipment; 3 yrs. army maintenance exp., 24, married. Sol Katz, 1890 Vyse Ave., Bronx 60.

year's work is that the student works on actual radios in need of repairs, not just laboratory models deliberately thrown out of gear."

And so the blind are learning to recognize tubes and parts, not through endless trial-and-error methods; but quickly and surely under methods developed by Mr. Peterson. Using his technique, they are learning to solder without burning themselves. "I have enough burns for all of them," comments Mr. Peterson.

The project is so strikingly successful that Mr. Peterson is already faced with the

problem of finding new quarters for the school because of its rapid growth. The letters, cards and telegrams which pour in daily from blind men are eloquent testimony to their desire for independence. Letters have been received from as far as England.

They are learning all about radio. In short, they are learning to become useful, important members of their communities. They are learning to be independent.

Radio-Craft will print in an early issue an article showing how to construct a Braille-type multitester. This instrument was designed and constructed by a blind radio amateur in New York.

ELECTRONIC STETHOSCOPE

THE value of electronic instruments in medical work has long been recognized. Among the most important of these is the electro-cardiograph. Now we have an instrument for study of the heart which combines the advantages of electronic amplification obtained in the electro-cardiograph with almost the lightness and portability of the ordinary stethoscope.

The new instrument, produced by Maico, leading manufacturer of electronic medical apparatus, is called the Stethetron. It consists of a microphone, a 3-stage amplifier, a special transducer and regular stethoscope earpieces.

One of the difficulties in the use of elec-

tronic instruments in the higher portion of the spectrum, in the fashion of a radio's "tone control." The special transducer is also built to respond to low-pitched sounds. The microphone is a special unit, a contact type being necessary to pick up sounds from the patient's body without being affected by extraneous, airborne sounds.

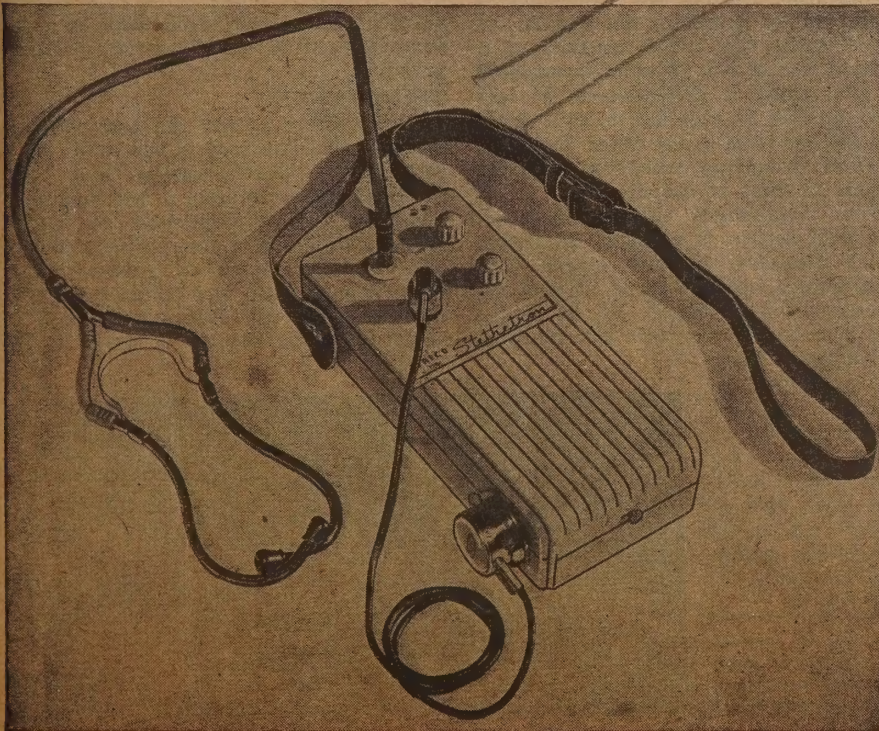
A certain type of heart murmur is inaudible to a physician with normal hearing, using an acoustic stethoscope, unless the patient is rolled on his side. In actual experiments, the Stethetron has revealed this murmur instantly while the patient was flat on his back.

The 3-stage amplifier provides electrical amplification up to 100 decibels. Acoustical

those which might indicate abnormal conditions.

Because the normal heart-beat is composed largely of low-frequency notes, the tonal emphasis modifier can also be adjusted to increase these at the expense of

one and three-fourth inches deep. The whole instrument can be slipped into an overcoat pocket. Instead of requiring a heavy extra case, it can be carried easily in the case with a physician's other instruments where it may be conveniently on hand on private calls.



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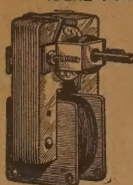
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A leading British radar expert proposes that radar be used for mapping the moon.

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GENUINE MICROPHONE TRANSMITTERS



Regular telephone transmitters taken from a large telephone supply company's overstock. Work perfectly on 2 dry cells. Can be used on P.A. systems, call systems, intercommunications, etc. A short-line telephone circuit, house-to-house or farm-to-farm phone lines, also to talk through your own radio or as concealed dictaphone pick-up. Useful replacements on battery-operated rural telephone lines.

THESE ARE GENUINE TRANSMITTERS, MADE BY KELLOGG, ELECTRIC AND STROMBERG-CARLSON, excellent in appearance and operation. A remarkable value and one seldom offered in these times. Shp. Wt. 1 lb.

ITEM NO. 160
YOUR PRICE \$1.50

AMAZING BLACK LIGHT!!

Powerful 250-Watt Ultra-Violet Source



The best and most practical source of ultra-violet light for general experimental and entertainment use. Makes all fluorescent substances brilliantly luminescent. No transformers of any kind needed. Fits any standard lamp socket. Brings out beautiful, fluorescent hues various types of materials. Swell for amateur parties, plays, etc. to obtain unique lighting effects. Bulb only. Shp. Wt. 2 lbs.

ITEM NO. 87
YOUR PRICE \$1.95

WESTERN ELECTRIC BREAST MIKE

This is a fine light-weight aircraft carbon microphone. It weighs only 1 lb.

Mike comes with breastplate mounting and has 2-way swivel adjustment so that it can be adjusted to any desired position. There are 2 wavy slots; one goes around neck, the other around chest. Straps can be snapped on and off quickly by an ingenious arrangement.

This excellent mike can be adapted for home broadcast, private communication systems. By dismounting breastplate, it can be used as desk mike.

Comes complete with 6-foot cord and hard rubber plug. Finished in sherdurized plate, non-rustable. Shipping weight, 2 lbs.

ITEM NO. 152
YOUR PRICE \$2.55



WATTHOUR METER

Completely overhauled and ready for immediate service. Designed for regular 110-volt, 60 cycle 2-wire A.C. circuit. Simple to install: 2 wires from the line and 2 wires to the load. Sturdily constructed in heavy metal case, 8 1/2" high, 6 1/2" wide, 5" deep. Westinghouse, G. E. Co., Wayne, Sangamo or other available make. Shp. Wt. 14 lbs.

ITEM NO. 33
YOUR PRICE \$4.95



HUDSON SPECIALTIES CO.

40 West Broadway, Dept. RC-2-46, New York 7, N. Y.

I have circled below the numbers of the items I'm ordering. My full remittance of \$..... (NO C.O.D. shipping charges) is enclosed (NO C.O.D. ORDERS UNLESS ACCOMPANIED WITH A DEPOSIT.) OR my deposit of \$..... is enclosed (20% required). Ship order C.O.D. for balance. NO C.O.D. ORDER FOR LESS THAN \$5.00. BE SURE TO INCLUDE SHIPPING CHARGES. Circle Item No. wanted.

147 159 160 87 152 33

Name

Address

Please Print Clearly

City State

144-MC TRANSMITTER

(Continued from page 319)

vides a maximum of 14 watts output for an input of about 27 watts at 2 meters. We use long-lines (1/4-inch copper tubing) in a shunt-fed ultra-audio circuit. This design keeps high voltage off the lines and was adopted after a number of accidental contacts with the copper tubing while using other circuits. The shape of the tubing saves much space.

The length of each line is 8 3/4 inches and their separation is 1 inch (center-to-center). One line connects to the tube plate cap through a 50 mmf. mica condenser. The other connects to the grid cap through a short length of twisted pair No. 18 wires (for rigidity). Connections to both tube caps and copper tubing are made by means of National grid caps (No. 8). The other ends of the lines terminate in banana plugs which fit into stand-off insulators. The plug-in feature is used because it provides good line rigidity and good electrical connection. A piece of lucite, drilled to accommodate the tubing, aids in keeping them in proper position.

We use a plate voltage of 380 on the HY75. The current with no load is 38 Ma. This rises to 56 Ma. when the antenna or a dummy load is added. The input is then approximately 22 watts. If the circuit has low efficiency, such as is caused by poor VHF chokes or insulation, it will be found that the no-load current will be higher and the tube may be overloaded. The plate should show no bright color even after the longest "rag chews." Since the filament is of the instantaneous heating type, it can be turned off between transmissions. (This is a good feature for mobile work.)

The photograph shows the transmitter adjusted for 146 mc. Frequency is controlled by changing the position of the shorting bar which consists of a twisted pair of No. 18 wires terminated in grid caps. A displacement of less than an inch is sufficient to tune from one end the band to the other. It is well to check frequency whenever a major change is made in the circuit.

Four home-made chokes are used. The grid return is made of 20 turns, 1-inch diameter, 1 1/2-inch length. The plate return uses 25 turns, 1/4-inch diameter, 2 1/4-inch length. No. 24 enameled wire is used for both. The filament chokes use 8 turns of No. 18 wire, 1/2-inch in diameter, 1/2-inch length.

When using plate modulation it is a good idea to keep an eye on the modulating equipment necessary for good results.

One end of Lecher-wire wavemeter, showing slider and turnbuckles to tighten wires.

For an R.F. input of approximately 25 watts, a single 6L6 with 350 and 250 volts on the plate and screen, respectively, is sufficient. Such a convenient set-up eliminates expensive and complicated apparatus at the modulating end of the transmitter.

Most amateurs use a relatively high-gain mike of the crystal or carbon variety for very-high-frequency operation, since very good fidelity is seldom necessary. However, we are equipped with a very low-level velocity mike at W1HCO/2. This requires a high-gain amplifier to bring up the voice.

The amplifier uses a 6J7, 6SJ7 and a 6L6 in that order. The audio stages are conventional except for the addition of a .4 megohm resistor directly between the plates of the last two stages. This degenerative circuit permits higher output with less distortion

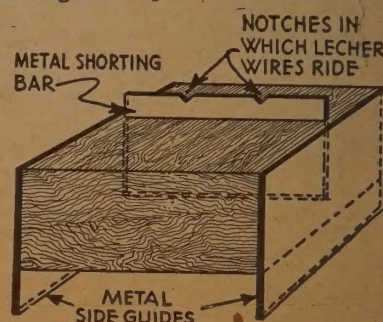


Fig. 3—Sliding block to short Lecher wires. because it minimizes grid current. The 6L6 can provide approximately 11 watts with relatively low distortion with such a connection.

The modulation transformer here is a UTC universal type. Primary and secondary connections are so made as to present an impedance of 4200 ohms at the primary and 6900 ohms at the secondary, thus matching impedances properly.

THE ANTENNA

Our location is not the best for 2-meter work. The roof is not easily accessible for readjustments and the feeder is approximately 4 wavelengths long. Height—so important at these frequencies—is very disappointing here. Use of a long coaxial cable is not recommended because it introduces excessive losses at VHF. Because of the difficulty of constructing a good two-

